

static responses will be largely determined by the identification and purification of specific neuropeptide receptors, the *in situ* analysis of receptor and receptor-gene regulation and the design of novel pharmacologic agonists and antagonists based on our understanding of receptor stereospecificity.

DONALD G. PAYAN, MD  
San Francisco

#### REFERENCES

- Barnes DM: Nervous and immune system disorders linked in a variety of diseases. *Science* 1986 Apr; 232:160-161
- Goetzl EJ (Ed): Proceedings of a conference on neuromodulation of immunity and hypersensitivity. *J Immunol* 1985; 135(suppl):739S-863S
- Iversen LL: The possible role of neuropeptides in the pathophysiology of rheumatoid arthritis (Editorial). *J Rheumatol* 1985; 12:399-400
- Payan DG, McGillis JP, Goetzl EJ: Neuroimmunology. *Adv Immunol* 1986; 39:299-323

## Compliance in Taking Medications

MEDICAL COMPLIANCE has become a major factor in treating chronic disease. It is estimated that 50% of patients do not comply with their medical regimens. Noncompliance is especially a problem in treating patients with allergic disorders, as they frequently must take medication even when they are feeling well.

Compliance will vary in direct proportion to patients' understanding of a medical problem, their perceived benefit of a therapeutic plan, the possibility of medication side effects, the inconvenience of a therapeutic regimen and its cost.

To decrease the incidence of side effects, a new medication regimen should be initiated with the lowest dose possible, then the dosage titrated slowly up to the optimal therapeutic range (unless side effects occur). Potential side effects should be explained to patients. A written sheet, such as the American Medical Association's patient medication instructions or one designed by the physician, should be given to the patient.

It is important for physicians to explain simply why patients must take their medication in a specific manner. This explanation should be given in lay terms, and patients should be provided with clearly written instructions, including the name of the medication, its dosage and schedule.

A practical way to provide these written instructions is through the use of an inexpensive wallet-sized card called the Medical Management Card. This card has been used with success for years at the allergy clinic of the University of California, Irvine. Complimentary copies of the Medical Management Card can be obtained from Mark Havel, Tri-City Medical Center, 4002 Vista Way, Oceanside, CA 92056 or local Key Pharmaceutical representatives.

In addition to the above, using a simplified drug regimen that, where possible, emphasizes the use of once-a-day or twice-a-day medication will greatly increase the probability that a patient will use the medication regularly. Prescribing Uniphyll, a once-a-day theophylline compound, can facilitate compliance and will still be as efficacious as the standard twice-a-day theophylline preparation, Theo-Dur. Theophylline compliance can be monitored by using Acculevel assay, which gives results in 30 minutes.

A simplified drug regimen is especially important in the school-aged population, where medication is frequently missed if a dose has to be taken at school. In younger children

(who are often unable to swallow a tablet), it is frequently difficult to administer a liquid preparation because of taste, problems with spillage and problems with dosing. Therefore, the use of a beaded capsule sprinkled over applesauce or other foods is frequently more convenient.

Physicians should be aware of the economics of a therapeutic plan, but not use generic substitutes to save costs if those products will not have the same therapeutic efficacy as the brand-name medication. This may be especially the case for certain long-acting, sustained-release theophylline preparations.

GERALD L. KLEIN, MD  
Vista, California

#### REFERENCES

- Eraker SA, Kirscht JP, Becker MH: Understanding and improving patient compliance. *Ann Intern Med* 1984 Feb; 100:258-268
- Fairshier RD, Bhola R, Thomas R, et al: Comparison of clinical effects and pharmacokinetics of once-daily Uniphyll and twice-daily Theo-Dur in asthmatic patients. *Am J Med* 1985 Dec 20; 79(suppl SA):48-53
- Klein GL, Ziering RW: Improving drug administration in young children with asthma and allergic rhinitis. *Immunol Allerg Pract* 1983; 5:49-53
- Ruffalo RL, Garabedian-Ruffalo SM, Pawlson LG: Patient compliance. *Am Fam Pract* 1985 Jan, pp 93-100
- Vaughan LM, Weinberg MM, Milavetz G, et al: Multicentre evaluation of disposable visual measuring device to assay theophylline from capillary sample. *Lancet* 1986; 1:184-186

## Indications for Giving Immune Globulin Intravenously

THE CURRENT AVAILABILITY of safe intravenous immune globulin preparations has led to applications in various clinical situations. Intramuscular preparations have been used for decades for replacement therapy in antibody deficiency states, but only relatively small doses are tolerated. There is a delay in absorption from the injection site, and some proteolytic degradation may occur before the immunoglobulin is absorbed into the bloodstream. These problems do not exist with intravenously administered immune globulin.

Immune globulin therapy is indicated in patients with humoral immune defects who are unable to produce adequate amounts of IgG (serum IgG levels less than 400 mg per dl in older children and adults or a proved subclass deficiency). Immune globulin given intravenously is preferable to intramuscular preparations in patients with limited muscle mass or bleeding tendencies, those needing large, rapid increases in their serum IgG level or those in whom intramuscular therapy is poorly tolerated. Doses should be individually tailored to a patient's clinical response because susceptibility to infection does not always correlate with IgG serum levels. Generally, levels within one standard deviation of normal for a patient's age can be attained with 150 to 300 mg per kg body weight of immune globulin given intravenously every three weeks, depending on a patient's rate of catabolizing the immune globulin. Deficiency of one or more IgG subclasses in a patient with severe or recurrent infections can be successfully treated with intravenous administration of immune globulin provided the preparation contains adequate concentrations of the deficient subclass(es). Preparations with an IgG subclass distribution similar to that in normal human serum are preferable and are currently available in the United States from Cutter, Hyland and Sandoz laboratories. Prophylaxis or therapy with intravenous immune globulin may also be indicated when